

REMARKS**Summary of Office Action**

Claims 1-18 are pending in the above-identified patent application.

Claims 1-18 have been rejected under 35 U.S.C. § 112, first paragraph for failure to comply with the written description requirement. The Examiner alleges that there is no support in the specification for "having more than one drainage channel."

Further, claims 1-15 and 18 have been rejected under 35 U.S.C. § 102(b) and/or § 103(a) as anticipated by and/or obvious from one or more references: claim 1-10, and 18 as anticipated by Sasaki U.S. patent No. 4,066,546 ("Sasaki"); claims 1-2, 11-15, and 18 as variously obvious from Sasaki or Fendya et al. U.S. patent 5,679,249 ("Fendya") alone, or from Sasaki in view of Pall et al. U.S. patent 3,737,036 ("Pall") or Arterbury et al. U.S. patent 5,293,935 ("Arterbury").

The Examiner indicates allowable subject matter in claims 16 and 17 and deems them allowable if they are rewritten in suitable independent form and overcoming the 35 U.S.C. § 112 rejection.

Applicant's Reply

Applicant appreciates Examiner's indication of allowable subject matter in claims 16 and 17. Applicant expressly reserves the right to rewrite these claims in suitable form for allowance if their base claim(s) are ultimately disallowed.

Applicant has amended claim 1 by replacing "at least one drainage channel" with "a drainage channel." Applicant respectfully submits that claims 1-12 conform to all requirements of § 112..

Applicant respectfully traverses the prior art rejections.

Claim 1

The elements of applicant's inventive filter plate, according to claim 1, includes a include a filter member arrangement made of one or more distinct filtering layers housed in a chamber in a filter body. A drainage channel is provided in the chamber on the downstream side of the filter arrangement to drain filtered fluid. All of the filter layers are sintered together to each other and to the filter body itself. The sintering processes allow the filter medium arrangement to be configured so that a filter cake is deposited from the fluid filtration on the filter plate for later removal. The later removal of a deposited filter cake may, for example, be accomplished by backflow of fluids through the filter body.

Rejection based on Sasaki

Applicant respectfully submits that the elements of claim 1 are neither disclosed, taught or suggested by Sasaki.

Sasaki discloses a filter medium which is made of porous packing material 16, a net 17, an unwoven fabric 18, a filter membrane 19 and a support frame 14

As the Examiner has correctly noted, porous packing material 16 may be made from filter layers some of which may be connected to each other by sintering. (See Office Action ¶ 5) However, on carefully reading Sasaki, applicant notes that Sasaki gives only two specific examples of sintered material that may be used in packing material: (1) particles of a synthetic resin, and (2) wire pieces of a metal or alloy. (See col. 3 lines 19-24: "porous packing material 16 of, by way of example, [1] a thickly woven wirecloth, [2] integrated wirecloths, [3] particles of a synthetic resin which are jointed to one another by sintering, [4] wire pieces of a metal or alloy which are jointed to one another by sintering or the like).

In any case, the porous material 16 is only mechanically attached to the remainder of the filter structure. (See e.g., col. 3 lines 25- 26: "On the packing material 16 through which filtrate may flow along radial directions is arranged a ring-shaped net 17 of a metal or alloy net 17").

Further, nowhere does Sasaki show or suggest "sintering" to attach net 17 to filter frame 14. Sasaki only refers to "soldering" to attach net 17 to frame 14. (See e.g., col. 3 lines 26-29). Further, Sasaki mechanically attaches unwoven fabric 18/filter membrane 19 to frame 14. (See col. 3 lines 33-40 "The unwoven fabric 18 and filter membrane 19 which are integrated onto the surface of the support frame 14 at the inner and outer peripheral portions thereof through annular sealing rings 20 and 21 are tightened to the support frame 14 by means of inner and outer pressing rings 22 and 23 and inner and outer set bolts 24 and 25 intermittently arranged along the circumferential direction of the frame 14"). Therefore, applicant respectfully submits that the Examiner has mistakenly stated that in Sasaki "at least one filter layer (16) is connected to the body by sintering." (See Office Action ¶5).

Applicant respectfully submits that Sasaki does not show, teach or suggest applicant's claim 1 "wherein all of the filter medium layers are connected to each other and to the body by sintering." For at least this reason claim 1 is patentable over Sasaki. Further, dependent claims 2-18 also are patentable because claim 1 is patentable.

Rejection based on Fendyai

Fendya describes a dynamic filter system that includes one or more filter elements arranged to rotate in housing. The filter elements comprise porous materials (e.g. metal or ceramic or polymeric membranes) that are mounted on a filter plate by heat sealing, welding, or

means of solvents or adhesives. (See e.g., col. 8:2-4, 38-48). Fendya describes the use of heat sealing in the context of polymeric membranes. (See e.g. FIG. 2, col. 8:43-47).

The Examiner correctly notes that Fendya does not disclose a "sintering" connection between the filter medium layers/arrangement to the filter body. (See Office Action ¶27). Further, the Examiner correctly cites the Miriam-Webster Dictionary for a definition of sintering as "forming a coherent mass by heating without melting". However, applicant respectfully resubmits that the Examiner mistakenly states (Office action ¶ 30) that the "heat sealing" of plastics (as is commonly used in packaging industry) makes "sintering" obvious to person skilled in the art. Applicant suggests that the Examiner is confusing the general term heat treatment, which may include sintering, with term heat sealing, which does not include sintering. The term heat sealing is used in the packaging industry to refer to localized heating and melting to seal packaging materials (usually plastic or polymer sheets or adhesive labels, etc.). (See e.g. USPTO patent classification 052 Package Making, also patent classification 493). (See e.g., http://www.westernstatesenvelope.com/labels/glossary/gloss_H.htm: HEAT SEAL LABELS "Label paper that has a coating which melts under heat").

Applicant's undersigned attorney respectfully submits that he has been unable to find a single reference that says that that the term "heat sealing" is synonymous with or includes "sintering."

As the Examiner has noted, Fendya makes no reference to sintering of filter membranes or parts to connect them to the filter plate. In particular, Fendya does not teach show or suggest "forming a coherent mass by heating without melting" i.e. sintering.

Applicant also notes that the other phenomena mentioned in the Office Action (See e.g. ¶ 30, welding and soldering) all involve "melting". Further, applicant submits that

sintering is not an obvious choice over welding, or soldering or heat sealing. The latter methods which involve localized heating and melting, are commonly used in the art precisely because they may use less energy (localized heating) and are easier to perform (e.g., using welding torches or guns). Sintering even though it involves heating to lower temperature than the melting temperatures can use more total energy or effort as the heating may not be localized. Further, sintering may require complex techniques, choice of materials, conditions and apparatus (e.g., furnaces) to be successful.

A benefit of sintering is that since lower temperatures are involved there is less heat warping of the filter structures and thus a reduced need for calendaring. Another advantage is that the filter hole sizes are not altered by the high differential heat/melting involved in the other processes. Further, all the filter elements and the filter body may be assembled/("sintered") in a single manufacturing step by sintering. (See e.g., specification ¶ [0037]). Another benefit is that all of the filter layers can be joined to and supported by the filter plate body over large areas or a plurality of contact areas (instead of merely at the outer edges as in Sasaki). This multiple contact area support provides stability to the filter, which is particularly advantageous in preventing deformation of the filter in operation (e.g., during the removal of filter cake during by back flow of liquid). These advantages have been explicitly or implicitly described in the specification.

Applicant further respectfully submits that the § 103(a) rejection of claim 1 as obvious from Fendya is based on impermissible hindsight reconstruction from applicant's disclosure and claims. For as previously noted Fendya does not teach show or suggest "forming a coherent mass by heating without melting" (i.e. sintering).

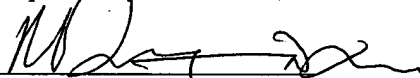
For the foregoing reasons claim 1 is patentable over Fendya. Further, dependent claims 2-18 also are patentable because claim 1 is patentable.

Conclusion

For the reasons set forth above, applicant requests that the prior art rejections be withdrawn. Applicant respectfully submits that this application is now in condition for allowance. Reconsideration and prompt allowance of which is respectfully requested.

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Respectfully submitted,



Manu J. Teiwani

Patent Office Reg. No. 37,952

BAKER BOTTS L.L.P.

30 Rockefeller Plaza

New York, New York 10112-4498

Attorney for Applicant

(212) 408-2614